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UNITED STATES DEPARTMENT OF AGRICULTURE
Research Program Development and Evaluation Staff
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REPORT AND RECOMMENDATIONS
of the
HUMAN NUTRITION AND CONSUMER USE RESEARCH ADVISORY COMMITTEE
Developed at its Fifth Meeting
December 5-8, 1967

HUMAN NUTRITION AND CONSUMER USE RESEARCH ADVISORY COMMITTEE

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PREFACE

The objectives of nutrition and consumer-use research to (1) analyze consumer needs and problems, (2) determine utility and economy of goods and services, (3) measure levels of living, and (4) evaluate and interpret research findings and develop guidelines for maximum well-being, are designed to provide Federal, State and industrial leaders with a sound basis for policies and programs and to assure maximum contribution of agriculture to the welfare of the consumer.

In preparation for this report the Committee reviewed progress reports and plans and needs for future research by the Agricultural Research Service Divisions that conduct human nutrition and consumer-use research. It also reviewed a preliminary report on Food and Nutrition prepared by a joint task force of the State Agricultural Experiment Stations and United States Department of Agriculture.

GENERAL RECOMMENDATIONS

The Human Nutrition and the Consumer and Food Economics Research Divisions of the United States Department of Agriculture are supported in their efforts to increase interdepartmental and interagency cooperation and are urged to explore and develop all means for extending such cooperation. A new working relationship between the Human Nutrition and the Consumer and Food Economics Research Divisions and the State Agricultural Experiment Stations seem to have been initiated as a result of "The National Program of Research in Agriculture" and especially through the Joint Food and Nutrition Task Force for the Agricultural Research Planning Committee of the USDA and the State Universities and Land-Grant Colleges. The possibility of organizing a more permanent planning and working relationship seems worthy of exploration.

The USDA and SAES are supported for their effort to project long-range research plans. However, if NCU is to obtain these objectives of 1972 and 1977 there has to be a greater increase in the number of scientist man-years in the next few years than the number which was allocated for 1968, 1969 and 1970.

The committee regrets the necessity to limit the essential work on human nutrition and consumer and food economics in the USDA and SAES because of defense priorities. As the national situation changes and increases in funds become available, the research program in this area should receive priority consideration. Proposals should be prepared for this eventuality immediately.

Food and Nutrition Task Force

The committee is gratified to find that the Joint Food and Nutrition Task Force has developed a report which is consistent to a very significant extent with the recommendations of this committee over the past several years. While in general agreement with the needs and priorities for research that are set forth in the report, the committee offers the following suggestions:

1. Priority for food and nutrition research has been underplayed in requesting more funds and man-hours and presentation of the need should be strengthened considerably. A greater sense of urgency needs to be expressed for the total priority for food and nutrition research and for training needs.
2. The statements on potential benefits in the introductory pages are too broad and do not give dramatic evidence of the value of nutrition research. For example:

The nutritional state of mothers during pregnancy is related not only to nutritional status of her infant at birth but also to frequency and severity of complications during pregnancy.

Under-nutrition is correlated with higher incidence of toxemia in mothers and higher incidence of prematurely born infants. Prematurely born infants not only have a much higher mortality but a much higher morbidity requiring intensive and expensive prolonged hospital care. Many of those who survive have irreparable damage in the central nervous system.

Over-nutrition (obesity) is directly related to increasing incidence of diabetes. The obese pregnant mother will have a higher incidence of still births or if pregnancy is interrupted (as is common practice) the infants will be fat and prematurely born. These infants also have a higher mortality and morbidity and those who survive have a higher incidence of birth defects and mental retardation.

Primary and secondary malnutrition are found in varying degrees in a high percentage of medically indigent infants and preschool children requiring hospital care. Chronic malnutrition in young children results in permanent stunting of physical growth and there is an increasing body of evidence that this degree of malnutrition also is associated with delayed emotional and intellectual growth (mental retardation).

Nutrition is a cornerstone of good preventive care and plays an important role in prevention and treatment of heart disease. It is always harder to dramatize preventive medicine in contrast to therapeutic medicine.

Serious nutritional problems are frequently observed in adolescent children especially during their periods of very rapid growth (girls 10-15 years and boys 12-18 years). These are very critical ages for our youth -- delayed growth and maturation result not only in a higher incidence of infection and disruption of school but also in serious and too often irreparable psychological problems.

Information on the physical status of men examined for entrance into the Armed Services may provide supporting documentary evidence.

3. This committee agrees with and strongly supports the emphasis in the report on multidisciplinary research and we would extend this concept in all possible ways.

Training of Scientists

The need for individuals trained in pre- and post-doctoral programs in appropriate disciplines for nutrition and consumer use research has become urgent. Therefore, the committee again emphasizes the necessity for the USDA to have authority and funds to initiate and sponsor graduate training and training programs at universities to meet the personnel shortage.

Increased recognition should be given to the fact that research conducted in an academic institution almost invariably results in providing specialized training to young scientists at the pre-doctoral and post-doctoral levels. Such training will help overcome the personnel shortages experienced by the USDA and the universities themselves and thus hasten the solving of important problems in nutrition and consumer use. The advisory committee urges the USDA to enlarge its research grant program to accomplish personnel increases as well as to provide a broader base for conduct of research on nutrition and consumer use. It is also suggested that the National Agricultural Research Advisory Committee or some other higher advisory group tackle the problem of scientific manpower needs for the USDA with a sense of urgency.

Without substantial funding of training programs the increased manpower to reach the goals proclaimed in "The National Program of Research in Agriculture" would appear to be difficult to achieve.

Commendations

This committee wishes to applaud the USDA for its contribution to the U. S. Food and Agriculture Organization Interagency Committee's excellent "Report of the U. S. Government to the Food and Agriculture Organization of the United Nations, 1964-1966."

The Human Nutrition and the Consumer and Food Economics Research Divisions are further commended for the honors and scientific achievements received by staff members during this past year.

NUTRITION AND FOOD SCIENCE

Improvement in Nutritional Status

It is urgent that the elimination of hunger in the United States and the improvement of nutrition should be the national goal of the United States. Every person in these United States should have the daily intake of an adequate diet. Yet, as each day passes, many of them do not receive the proper amount of food or quality of diet needed. Hunger and inadequate nutrition still exist in every state of the Union.

A crash program to determine the nutritional status of the population and to eliminate hunger should be the main objective of the United States Government. This goal can be achieved only through the cooperative efforts of many individuals and groups and many agencies of the Federal and State Governments. The knowledge and resources exist to determine the nutritional state of the individual and the means of correcting the deficiencies.

There is urgent need for multidisciplinary cooperative nutritional research studies, especially in the area of human nutrition. Various Federal agencies, including the USDA, are of necessity involved in human nutrition studies. This committee recommends that the USDA, with its long-term experience and competence in evaluating quantity, quality, distribution, consumption, and nutrient content of foods actively participate, insofar as practicable, in regional and national programs of other government agencies such as Children's Bureau and U. S. Public Health Service. These agencies are planning and have on-going nutritional status studies of certain age groups within selected segments of the population in various regions of the United States of America.

We also advise that the USDA recommend the establishment of a new Inter-departmental Committee of Nutrition for National Development (ICNND) to provide an effective means of communication between the various Federal agencies concerned with nutrition. The National Academy of Sciences might be very helpful in providing guidance in this serious undertaking.

Funding of Research in Human Nutrition

It is now clearly evident that "The National Program of Research in Agriculture" is serving well as a framework within which research in the field of human nutrition can be planned, programmed and budgeted. The committee is compelled, however, to emphasize as it did in 1966, that the proportionate funding of research in human nutrition in relation to funding of other agricultural research is far too little and will thus hinder the seeking and utilization of knowledge which can be so very beneficial to man. It is urged that this disparity be recognized quickly so that it may be overcome before plans and budgets for other activities become so firmly established that a correction cannot be made.

Nutritional Status and Requirements

In view of the proposed 1968 revision of the Recommended Dietary Allowances of the National Research Council it is recommended that intensive nutrition research studies be conducted on the specific age, activity and sex groups affected to determine if their normal eating patterns can supply the nutrient needs recommended in the modification. Emphasis is particularly placed on the evaluation of the iron intake of girls in the 10 to 22 year age bracket

to determine if there is a need for iron fortification in the diet.

Increased emphasis should be placed on basic research on the significance of intake of fats from different food sources as affected by other dietary components to provide increased evaluation of the roles of hormone status, environmental stress, and other physiological functions. A need exists to develop the chemical composition and characteristics of foreign as well as domestic fats and oils used in edible food products. Special attention should be given to determining the significance of high levels of saturated fatty acids such as lauric acid in coconut oil.

Nutritive Value of Foods

Increased emphasis on research relating to nutrient content of foods is encouraged. The USDA has been a pioneer and is recognized as one of the authorities in the preparation of tables of food composition. It is recommended that careful review be continued of the scientific literature and all other available sources including unpublished information from industry to determine where there are gaps in needed information concerning nutrient content of foods. The compilation of this data would serve as a guide and help to give priorities for future studies to eliminate the gaps in analysis of nutrients.

Because the evaluation of nutrient content of new foods is of particular importance, resources should be available to maintain current evaluations and report the nutrient content of these new foods. A cooperative program with industry on the compilation of data of "newer" foods would be very useful for nutritionists and the consumer.

The publication of the new handbook on "Nutritive Values for Foods in Terms of Household Measures and Market Units" will be especially helpful to school lunch managers and dietitians. New tables on carbohydrates and fatty acids are also important in appraising diets and in research studies investigating metabolic processes.

Also essential are studies of the changes in the nutritive content of diets due to the introduction of new foods and the changing pattern of consumption. With the very significant changes being made in the content of new and processed foods, it becomes necessary to evaluate the aggregate effects on the total diets of individuals.

The committee also recommends that NCU extend studies, and collect and assemble the data on the influence of commercial processing, storage, transportation, and handling on the nutrient value of foods. It is suggested that studies be extended on the effect of domestic and institutional preparation methods upon the nutrient content in foods.

The nutrient content of substitute or formulated foods such as artificial sweeteners, coffee whiteners, citrus substitutes, imitation milk, and the various imitation dairy dessert products should be determined and their influence on total dietary intake should be appraised. These foods are now consumed in substantial quantities and thus can influence nutrient intake either favorably or unfavorably.

In connection with the continuing collection of data on composition of foods for Handbook No. 8, we emphasize the need for correlating and giving possible priority to types of foods used in institutional feeding and institutes for the aged and day-care facilities as a necessity in assessing adequacy of diets.

The chemical forms in which nutritionally-significant trace mineral elements occur in foods should be given increased consideration by the research divisions.

The influence of fortification of flour, bread, milk and margarine through government-regulated programs for the general improvement of nutritional status should be evaluated to determine its impact and thereby serve as an illustration of the value of applied nutrition based on research. A search might then be made for additional avenues for general improvement of the dietary intake through fortification. Helpful suggestions as to how such foods might be encouraged advantageously in either domestic or foreign feeding programs would be most appropriate at the time of their introduction.

FOOD CONSUMPTION AND DIET APPRAISAL

National Food Consumption Surveys

The Department is commended for its contribution to the nationally significant food consumption studies. These national studies represent this nation's only source of food consumption data related to family size, composition, and income.

The Consumer and Food Economics Division has a significant comparative advantage in conducting national surveys of food consumption. Because the results from these studies make a very important contribution, the committee suggests the Division continue its leadership in this area, perhaps concentrating even more on the national studies. The core data from these food consumption studies are used for a multiplicity of purposes by government and nongovernmental agencies at all levels in programs totaling billions of dollars. The food plans which rely heavily on food consumption survey data have many uses. For example, one of the USDA food plans provides the basic information and criteria of the dollar amount for food by State and

Federally financed public welfare programs in all fifty states. Local public welfare programs and voluntary agencies rely upon these data for determining eligibility criteria and ability to pay for services. Eligibility ~~criteria~~ for USDA food stamp and donated food programs, certain public health, rehabilitation and housing programs, loan programs, and even financial eligibility for education scholarships, are determined by income scales that include one of the USDA food plans as a basis. The Social Security Administration used one of these plans for determining the national poverty line. The nationally and internationally used City Worker's Family Budget of the U. S. Department of Labor, Bureau of Labor Statistics, relies upon the USDA plans.

The committee believes it is important to integrate the national data collecting activities as much as possible and suggests that resources be invested in 1968 in planning for the next national food consumption study and that problems and advantages be explored of having an integrated study of food consumption, family expenditures, and nutritional status to coincide with the census.

Advantages may accrue from integrated studies of food consumption and nutritional status. Pilot studies in this area should be initiated next year to evaluate the procedures and potential of cooperative research with the Department of Health, Education and Welfare. By this means, extensive economic and social data could be obtained from identical families whose members are evaluated for nutritional status. It is important not only to quantify the level of nutritional adequacy but to attempt to identify the social and cultural factors or limitations associated with inadequate diets. Also by developing relationships between food purchases and nutritional status the broad national food consumption studies may be more effective in identifying areas of nutritional inadequacy.

The committee urges an expanded program in the area of food consumption of newly developed products. It is particularly important to determine what people in the United States are eating. The diet of our people is constantly changing as more and more processed or fortified foods are available.

Diets are not determined simply by the availability of food or the adequacy of incomes for food purchases. The diet is a function of food choices. And food choice is poorly understood. Hence additional studies should be initiated to determine the basis of food choices. Also there is an urgent need to investigate the effect of the child feeding and guidance programs on the development of food habits.

The committee supports the cooperative survey of attitudes and behavior of adults toward food fallacies and misrepresentation of food facts. However, it highly recommends that this survey be extended to include the teenager and younger adult.

The recommendation of last year which pointed to the need for studies in-depth to determine the health and economic benefits of the Food Stamp Program is reiterated. Such studies should include (1) the relationship of possible effects of a family's participation in the Food Stamp Program and the availability of money for children to participate in school lunch programs, and (2) the use of such programs to subsidize inadequate public welfare programs. Studies such as the one recently conducted in Mississippi represent only pilot inquiries into a national question.

It is recommended that when food plans are revised the age groupings be correlated with the age groups as they appear in the Recommended Dietary Allowances of the National Research Council.

Studies should be initiated of the effects on the adequacy and cost of diets of families in which both parents are working.

SCHOOL LUNCH PROGRAMS

The committee fully supports the nationwide study of the nutritive content of type A lunches. Continuation of research that would help to improve participation is urged. An attempt should be made to determine whether older children would make wise selections without the requirements of the type A pattern. Studies on acceptability would be helpful in preparing guidelines for the preparation of menus.

In recognition of the demonstrated relationship between food and good nutrition and the capacity of children to develop and learn when an adequate diet is available, it is recommended that the research efforts of the USDA be extended, expanded and strengthened in meeting the food needs and desires of today's students participating in the National School Lunch Program as they relate to quantity, quality, variety and presentation.

Successful implementation of the child nutrition programs depends in part upon the acceptance of foods. The physiological and psychological factors which affect sensory perception of food quality need to be related to the food preferences of students.

New institutional food production systems developed to process large quantities of food need to be tested and evaluated to assess the principles that can be applied in providing a high quality product.

FAMILY ECONOMICS

The committee recommends that the Department of Agriculture take leadership and responsibility for developing an interdisciplinary study of the health and economic data of those rural families who move to urban areas. Such studies are needed to give direction to programs for strengthening family life for this migrating population.

Immediate and effective multidisciplinary research to study the validity of the concepts and methods that are used as criteria in determining the eligibility for economic health and social programs should be initiated. The time has come to question whether monetary value of an adequate diet can any longer be the chief criteria for eligibility in view of socio-economic forces affecting family living patterns.

The committee wishes to commend the Consumer and Food Economics Research Division for compilation and publication of reports pertaining to the 1960-61 Survey of Consumer Expenditures. While recognizing the problems involved in a study of this magnitude, the committee strongly urges that all efforts be made to expedite the publication of data from the proposed 1971-72 Survey of Consumer Expenditures. Recognition is also given for the analytical uses which the Division has made of the survey data in determining the cost of raising a child and in determining equivalent levels of living for farm and non-farm families. We urge continuation of the use of such data in exploring other specific questions such as the proposed plans relating to mortgage credit and interrelationship of consumption and investment aspects of home ownership.

Factual information is needed on the use of consumer credit as it relates to family economics, well-being, and points of vulnerability. Such data can serve as guidelines for the development of counseling materials and as the basis for legislative action. Plans for research in this area are commended.

Initiation of work designed to measure the monetary value of family members' services is important. A model of methodology and a national base for comparison of these contributions need to evolve. Not only is such information needed to recognize the household contribution to the total national product, but there is a significant need for such information to determine the value of the homemaker's services in a variety of situations. Determination of the economic contribution of the wife is a growing legal concern. Decisions of the homemaker to enter the labor force also require consideration of the cost of alternate services, public or private.

A standard is needed for measuring adequacy of housing and work on its development is encouraged.

The Family Economic Review provides a real service as a major source of current information for teachers, social agencies, and others in education, research, or counseling on economic matters. The publication should be continued and expanded.

Extension of the research of the Family Economics Branch through research grants is strongly supported. The proposed family living study of Indian families and the previously approved grants on decision-making expand the scope of the Branch and are needed research.

CLOTHING AND TEXTILES

The committee is pleased to learn that the laboratory facilities for textiles and clothing research have been established at the University of Tennessee. It is hoped that this will facilitate the recruitment of the needed personnel so that work may begin as soon as possible.

The committee supports the initiation of the study of body measurements of elderly women and approves the plans to determine whether the body proportions of 20 to 29 year-old women have changed significantly since 1939-40.

As soon as personnel is recruited, the committee recommends that consideration be given to assigning priorities to the following research projects:

1. Development of test methods for predicting the end-use performances of textile products.
2. Effects of laundry variables including drying, on the edge abrasion of durable press fabrics.
3. The role of fabrics in the transmission of microorganisms during laundering.
4. Determining to what extent viruses survive dry cleaning and laundering, and are transferred from one fabric to another during the cleaning process. A study of coin operated dry cleaning machines should be included.
5. Determining by a pilot study to what extent contamination of clothing by pesticides constitutes a problem.
6. Determining the effectiveness of soil release agents on durable press fabrics.

